



## RIVER MILE 10.9 REMOVAL ACTION PERIMETER AIR MONITORING PROGRAM

Perimeter air monitoring is being conducted by the CPG and its contractors during the RM 10.9 Removal Action. This Perimeter Air Monitoring Program (PAMP) prescribes appropriate management measures and monitoring that protects the public living and working adjacent to the removal area at RM 10.9 from potential airborne contaminants. Specifically, the plan protects nearby residents, recreational users of the park and the park worker. The Perimeter Air Monitoring Program is a part of the Community Health and Safety Plan.

The perimeter air monitoring program will start a few days prior to the start of dredging and continue through until the completion of field work. There are two aspects of the air monitoring program; real-time air monitoring which provide results immediately during the removal operations, and samples that are collected over a 24-hour period and sent to a laboratory for analysis. A map of the monitoring locations is provided below. Real-time air monitoring will occur during dredging/capping operations roughly 12-hours a day 6-days a week. Twenty-four (24) hour composites samples are collected during the operational and non-operational times of day 6-days a week. Some monitoring may be reduced or eliminated pending regulatory approval at the completion of dredging and not conducted during the capping portion of the project.

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*Real-time air monitoring supplemented by air sampling and analysis for target COPCs will be conducted. Off-site odor conditions will be monitored based on multiple sources of information including community concerns.*

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### Program Objectives

The main objective of this program is to identify air monitoring and management response measures to be implemented during dredging and capping operations that limit potential exposures to the public. This program details the monitoring and associated warning values which if reached, will be used to initiate further investigation into the cause(s) and impacts that these works may be having on the public in the vicinity of dredging operations, as well as to determine the appropriate management response. This response may include temporary cessation (stop work) of dredging and capping activities if the impact is found attributable to either, to allow for time to effectively resolve the matter and assure that air monitoring levels return to below-warning values.

### Potential Air Emissions

Due to the proximity of the public to the dredging and barge loading in the vicinity of RM 10.9, the NJDEP has requested that the CPG evaluate the potential of the dredging operations to emit air emissions (Potential to Emit (PtE)). Potential emissions were assumed to come from the dredged sediment. The modeling work concluded that the PtE for the contaminants of potential concern (COPCs) present in the RM 10.9 sediment is below the NJDEP reporting threshold. The PtE for dioxins and PCBs were 3.5 and 4.5 times below the threshold respectively.

While modeling predicted no exceedance of NJDEP reporting threshold values, there is the potential for odors from the operation. Consequently, the CPG will conduct real-time air monitoring supplemented by air sampling and analysis for target COPCs.

Wind-borne dust is a transport pathway for potential inhalation exposure hazards relative to the dredging and capping activities. Many of the compounds are primarily a concern as particles or as contaminants adhered to particles, particularly for semi-volatile compounds which have a very low vapor pressure. The Removal Action, however, involves river sediments that will be moderately wet to saturated during the dredging operations and therefore minimal particulate exposure is anticipated.

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The nature of the exposure at an off-site public location can be:

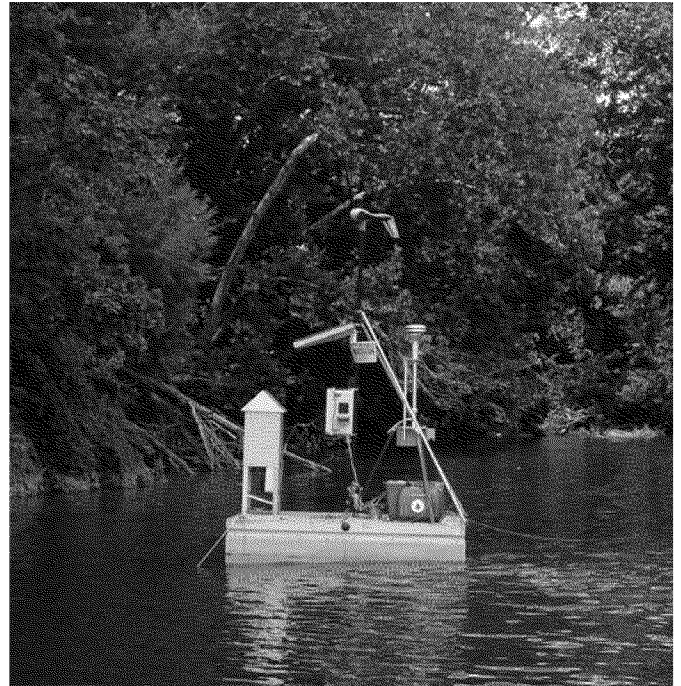
- ☐ Sub-chronic, or shorter-term (typically occurring for a few months or a year), or
- ☐ Chronic, or longer-term, (typically occurring for several years),

The RM 10.9 dredging activities will only occur for approximately 60-days so any exposure would be considered sub-chronic. Given the relatively low level concentration of chemicals of potential concern (COPCs) found in the sediment, health risks if any would only be associated with long-term exposure and not any incidental or short term exposure since:

- ☐ Adverse health effects from the inhalation of these constituents are associated with much higher concentrations than are reasonably generated in an open air setting by dredging related dust emissions; and
- ☐ Natural atmospheric dispersion and particulate settling (by gravity, rain or through contact with buildings and structures) prevent high dust concentrations from persisting in the ambient air.

The exposure point air concentration for target chemicals at off-site locations where a member of the public may inhale the chemical is conceptually made up of two components:

- ☐ The concentration of that chemical that is typically present in outdoor air unrelated to the dredging activities (i.e. the baseline ambient air concentration or “background”) and
- ☐ The concentration of that chemical that due to the transport and dispersion of dust from the removal/stabilization operations.



In River Air Monitoring Station

The overall purposes of implementing an air monitoring and sampling program at the site is to:

- ☐ Establish background levels.
- ☐ Monitor and document perimeter ambient air levels of target COPCs.
- ☐ Screen results against human health concern levels
- ☐ Determine when to implement appropriate dust and/or odor control measures and/or amend best management practices (BMPs)

The potential to emit calculations requested by NJDEP showed that VOCs were below NJDEP permitting thresholds. Hydrogen sulfide has been monitored during all sediment collection activities conducted for many years and the levels have been below monitoring requirements. Nevertheless, real-time monitoring of VOCs and hydrogen sulfide will be conducted downwind of the dredging operations at RM 10.9. The hydrogen sulfide monitoring is more for odor control than for a health risk. Real-time monitoring and sampling for particulates (dust) will be conducted at specific fixed locations depending on wind direction surrounding the dredging operations at RM 10.9.

To be protective of the public, the total ambient concentrations of the target COPCs will be below an appropriate risk-based concentration threshold at the point of potential exposure. These thresholds may be chemical-specific concentration or concentration limits on total dust (particulates) that are established to be protective of a number of chemicals of dust assuming a sub-chronic short term exposure.

The air monitoring plan will consist of the following:

- ☐ real time monitoring of meteorological data to determine what areas are downwind of removal activities,
- ☐ real-time monitoring for volatile organic compounds(VOCs),
- ☐ monitoring of hydrogen sulfide(rotten egg smell),
- ☐ real-time monitoring of dust (particulates),
- ☐ 24-hour composite samples at fixed locations for particulates (dust) to be analyzed for targeted COPCs that would adhere to dust particles.

### Volatile Organic Compounds Monitoring

Air will be monitored in downwind locations of the dredging operations and stabilization facility to ensure that total VOC concentrations at the work zone perimeter do not exceed the air quality criteria. Air quality criteria for total VOCs of 10 parts per million above background levels has been established as the action level. To provide additional assurance, a lower investigation level of 5 ppm has also been established as the warning level. Should the air monitors detect VOC concentrations exceeding the investigation level for a 15-minute period, the source of the emissions will be investigated and evaluated. Should the air monitors detect VOC concentrations exceeding the control level for a 15-minute period, mitigation measures will be implemented. If a 15-minute average of 10 ppm is exceeded because of dredging activities or the stabilization facility, work will be stopped until corrective measures are implemented.

### Hydrogen Sulfide Monitoring

Many sediment samples have been collected from the RM 10.9 area and the levels of hydrogen sulfide have been very low with odor barely noticeable. Sensitive receptors can smell the "rotten egg" odor of H<sub>2</sub>S at low concentrations in air 0.5 ppb (0.0005 ppm) and 90 percent of people can smell it at levels of 50 ppb (0.05 ppm).

Hydrogen sulfide monitoring will be conducted periodically at downwind locations from the dredging operations while dredging is occurring. If the hydrogen sulfide "warning level" of 0.01 ppm is exceeded over a 15-minute period, the source of sulfide will be investigated. If the hydrogen sulfide "action level" of 0.02 ppm is exceeded over a 15-minute period, operations will be suspend until the hydrogen sulfide level returns to below the 1 ppm within 15-minute period or corrective measures are implemented, unless it can be demonstrated through investigation that dredging is not the cause of exceedance.

### Dust/Aerosol Monitoring

Dust will be monitored to ensure that concentrations at downwind locations of the dredging operations remain below the air quality criteria. An air quality criteria for dust of 450 µg/m<sup>3</sup> above background levels has been established as the "action level" for the project. To provide additional assurance, a lower control level "warning level" of 150 µg/m<sup>3</sup> above background levels has also been established. If this lower level is exceeded for a 15-minute period, the source of dust will be investigated. If the dust is from dredging operations mitigation measures will be implemented. If the "action level" is exceeded, and it is due to the dredging/ stabilization operations, then on-site activities that generated the dust will be stopped and there will be a re-evaluation of the activities.

In addition to the real-time monitoring of dust, a composite sample of dust will be collected during 24-hour periods at fixed monitoring locations downwind of the dredging operations and analyzed for select COPCs and compared to human health risk based criteria.

### Contaminants of Potential Concern (COPCs) Particulate Monitoring

In addition to the real-time monitoring of dust, a composite sample of the dust will be collected during 24-hour periods at four locations, one on the river and three in the park (IRS #1, PMS #1, #2, #3) which surrounds the dredging /capping operations, and these samples will be analyzed for select COPCs. The results will be reviewed during the project and compared to human health risk based criteria. If these criteria are exceeded then appropriate dust controls measure will be implemented. Due to the concentrations in the sediment, the potential dust concentration of contaminants does not pose an acute (short term) hazard, therefore it is not necessary to monitor for individual COPCs in real-time.

### Barge Transport Monitoring

The barges used to transfer dredged sediment from RM 10.9 to the stabilization facility are part of the dredging operations and will be included in the air monitoring while at that location. The dredge material will be wet and may have a layer of water on top of it as the sediment settles to the bottom of the barge and residual water comes to the top. For this reason and as shown in the Potential to Emit calculations performed for NJDEP, emissions from the barged material will be low. The barges will remain at the Removal Area until they are ready for transport downriver to the stabilization facility. It is anticipated that barges full of dredged sediment will only be stationary for very short periods of time, less than an hour, during the trip from RM 10.9 to the stabilization facility preventing downwind impacts. Initial air monitoring will be conducted before the first trip from RM 10.9 to the stabilization facility to assess the barge transport impact.

### Noise Monitoring

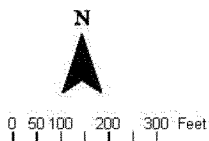
Noise monitoring will consist of sound level measurements and done manually by field personnel periodically while in the park attending to the air monitoring equipment. At a minimum, a reading will be collected once every three hours during the daytime 12-hour construction shift. Additional monitoring will be conducted if there are complaints of noise from people in the park or nearby residents. Routine monitoring will occur along the shoreline 100 feet north, 100 feet south and at the mid-point of the removal area. The New Jersey daytime maximum hourly noise average standard is 75 dB.

### Meteorological Measurements

There will be on-site meteorological data collection station located within the park near the RM 10.9 removal area. The weather station will continuously monitor and record the following; air temperature, air pressure, wind direction and speed, precipitation quantity and intensity and relative humidity. The wind direction and speed will be used to ensure that air monitoring stations are properly situated to monitoring the dredging activities and to document the conditions during the removal action.

Project personnel will have access to and routinely monitor other weather information sources such as the National Weather Service website and broadcasts as a backup to the on-site real-time weather station.

# River Mile 10.9 Removal Action Perimeter Air Monitoring Program



Notes:  
1. Orthophoto: NJGIS, 2007

Perimeter Air Monitoring Stations  
RM 10.9 Removal Action Air Monitoring Plan  
Lower Passaic River Study Area, New Jersey